APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,341	08/19/2003	Karl-Heinz Forster	163-42	5853

23869	7590	01/23/2006

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EXAMINER
KIM, PAUL L

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/644,341	FORSTER ET AL.
	Examiner	Art Unit	
	Paul Kim	2857	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 June 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,3-20,22-27 and 29-31</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>31</u> is/are allowed.

6)☒ Claim(s) <u>1,3-6,8-20,22-27,29 and 30</u> is/are rejected.

7)☒ Claim(s) <u>7</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 3, 4, 22, 23, 29, and 30 are objected to because of the following informalities: Claims 3, 4, 22, 23, 29, and 30 are dependent on a canceled claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kozaki et al.

With regard to claims 14, Kozaki et al teaches a method of determining the life of a system comprising: determining a flow rate of the fluid power system (col. 8, lines 36-37); determining a cycle time of the system (col. 8, lines 38-41); integrating the flow rate over the cycle time to determine a diagnostic value (col. 8, lines 44-47); and comparing the diagnostic value to a predetermined value to determine operational system status (col. 8, lines 65+).

With regard to claims 15 and 16, Kozaki et al teaches storing the diagnostic values and comparing the value at a first time period to a value at a second time period to determine a change in diagnostic value (col. 8, lines 60-65).

With regard to claim 17, Kozaki et al teaches comparing the diagnostic value to the change in time (col. 8, lines 65+).

With regard to claim 18, Kozaki et al teaches a method of determining the life of a system comprising: sensing a characteristic of the system to determine a characteristic value (fig. 6, part 43); applying the characteristic value to a first algorithm to determine a beginning and end of a cycle, subjecting the characteristic value to a second algorithm to determine a diagnosis value calculated over the beginning and end of the cycle (col. 8, lines 59-65); and comparing the diagnostic value to a set of known values (col. 8, lines 65+).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1, 4-6, 8-13, 20, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozaki et al in view of Metso et al.

With regard to claims 1 and 5, Kozaki et al teaches a method of determining the life of a system comprising: determining a characteristic of the cyclic system to determine a characteristic value, wherein the value is a flow rate (col. 8, lines 36-37); determining a cycle time of the cyclic system (col. 8, lines 38-41); applying the flow rate to an algorithm in which the value is integrated over the cycle time to determine a

diagnostic value (col. 8, lines 44-47); and comparing the diagnostic value to a predetermined value to determine the system status (col. 8, lines 65+). Kozaki et al teaches determining system status, but does not specify status being service life of the system. Conrad et al teaches a method of determining service life of a system by calculating cycle time and flow rate (¶ 67). Since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations (Ex Parte Masham, 2 USPQ F.2d 1647 (1987)), it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Kozaki et al, so that service life is determined, as taught by Conrad et al, in order to benefit from increased versatility by being able to diagnose a wide range of problems.

With regard to claim 4, Kozaki et al teaches a flow sensor for determining flow value (fig. 6, part 43).

With regard to claim 6, Kozaki et al teaches displaying diagnostic information (fig. 6, part 4e).

With regard to claims 8 and 9, Kozaki et al teaches the flow rate being differentiated with respect to time (col. 8, lines 33+).

With regard to claim 10, Kozaki et al teaches the flow rate being integrated over a time period with respect to movement of an actuator (col. 9, lines 39-41).

With regard to claim 11, Kozaki et al teaches the system including a fluid power valve connected to a piston driven cylinder and further comprising integrating the flow

rate over the time period defined by actuation of the valve and return to an initial

position (fig. 6, part 27 & col. 8, lines 33+).

With regard to claim 12, Kozaki et al teaches determining the time T period from

a movement of a device in the system and integrating the flow over the time period T

(col. 8, lines 36-44).

With regard to claim 13, Kozaki et al teaches integrating the flow rate Q over the

time period T, where T equals the time for one complete cycle (col. 8, lines 36-44).

With regard to claim 20, Kozaki et al teaches an apparatus for determining an

operational status of a cyclic fluid power system comprising: a sensor for sensing

system characteristic, wherein the characteristic is flow rate (fig. 6, part 43); a

calculating unit including circuitry for performing an integration on the flow rate to

determine a diagnostic value and comparing the value to a predetermined value to

determine status of the system (fig. 6, part 4a); and a notification device connected to

the calculating unit for indicating status of the system (fig. 6, part 4e). Kozaki et al

teaches determining system status, but does not specify status being service life of the

system. Conrad et al teaches a method of determining service life of a system by

calculating cycle time and flow rate (¶ 67). Since it has been held that a recitation with

respect to the manner in which a claimed apparatus is intended to be employed does

not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed

structural limitations (Ex Parte Masham, 2 USPQ F.2d 1647 (1987)), it would have been

obvious to one of ordinary skill in the art, at the time of the invention, to modify Kozaki et

al, so that service life is determined, as taught by Conrad et al, in order to benefit from

increased versatility by being able to diagnose a wide range of problems.

With regard to claim 22, Kozaki et al teaches the diagnostic value being

determined based upon flow rate signal (col. 8, lines 36-44).

With regard to claim 23, Kozaki et al teaches a processor integrating the system

characteristic over time (col. 4, lines 51+).

With regard to claim 24, Kozaki et al teaches the system's characteristics being

differentiated to determine the values over which the integration of the systems

characteristic takes place (col. 8, lines 44-52).

With regard to claim 25, Kozaki et al teaches the calculating unit being connected

to a control device, the device generating information on the cycle time and the

processor using the cycle time to perform integration of the system characteristic (col. 4,

lines 51+).

With regard to claim 26, Kozaki et al teaches the processor comparing the

diagnostic value to a predetermined value and generating a notification (fig. 6, part 4e).

6.   Claims 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kozaki et al in view of Assenheimer et al.

Kozaki et al teaches a method of determining the status of a system using flow

rate and cycle time but does not specify using the equation: $K = \int Qdt$. Assenheimer et

al teaches using the equation $K = \int Qdt$ to determine flow rate of a device (col. 7, lines

33-45). It would have been obvious to one of ordinary skill in the art, at the time of the

invention, to modify Kozaki et al, so that the equation $K = \int Q dt$ is used, as taught by

Assenheimer et al, in order to be able to determine system status accurately.

7.   Claims 27, 29, and 30 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kozaki et al in view of Assenheimer et al and Conrad et al.

With regard to claim 27, Kozaki et al teaches a cyclic fluid power system

comprising: a valve in fluid communication with a fluid source (fig. 6, part 27); an

actuator operatively connected to the valve (col. 4, lines 66-68); a sensor for

determining the flow rate (fig. 6, part 43); a calculating unit including circuitry for

performing integration on the characteristic to determine a diagnostic value and

comparing the value to a predetermined value to determine status of the cyclic system

(fig. 6, part 4a); and a notification device (fig. 6, part 4e). Kozaki et al does not specify

using the equation: $K = \int Q dt$ to determine system status. Assenheimer et al teaches

using the equation $K = \int Q dt$ to determine flow rate of a device (col. 7, lines 33-45). It

would have been obvious to one of ordinary skill in the art, at the time of the invention,

to modify Kozaki et al, so that the equation $K = \int Q dt$ is used, as taught by Assenheimer

et al, in order to be able to determine system status accurately.

Kozaki et al also does not specify determining service life of the system. Conrad

et al teaches a method of determining service life of a system by calculating cycle time

and flow rate (¶ 67). Since it has been held that a recitation with respect to the manner

in which a claimed apparatus is intended to be employed does not differentiate the

claimed apparatus from a prior art apparatus satisfying the claimed structural limitations

(Ex Parte Masham, 2 USPQ F.2d 1647 (1987)), it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Kozaki et al, so that service life is determined, as taught by Conrad et al, in order to benefit from increased versatility by being able to diagnose a wide range of problems.

With regard to claims 29 and 30, Kozaki et al teaches the actuator including a drive component movable from an initial position to an actuated position and back to the initial position, where T equals the time period defined by actuation of the valve and return to an initial position or when the drive component moves from the initial position to the actuated position (fig. 6, part 27 & col. 8, lines 33+).

Allowable Subject Matter

8.   Claim 31 is allowed.

Claim 7 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach determining system status comprising: determining a characteristic of the system, determining a cycle time of the system, integrating the characteristic value, evaluating the diagnostic value over a plurality of system cycles to determine a change in the diagnostic value, evaluating the cycle time over a plurality of system cycles to determine a change in the cycle time, and comparing the change in diagnostic value to the change in the cycle time.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tomita and Zdrojkowski et al both teach a method of determining status of a person or system by calculating flow rate.

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Kim whose telephone number is 571-272-2217. The examiner can normally be reached on Monday-Thursday 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

PK
January 6, 2006

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